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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,568	01/22/2002	Mou-Shiung Lin	085027-0059	6093

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McDermott Will & Emery LLP
600 13th Street, NW
Washington, DC 20005-3096

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

NOTIFICATION DATE	DELIVERY MODE
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05/13/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/055,568	Applicant(s) LIN ET AL.	
	Examiner JAMES M. MITCHELL	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 219-223,228,232,236,238-242,251 and 257,259,260,262-267 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 219-223,236,239-242,251,260 and 262-267 is/are rejected.
- 7) ☒ Claim(s) 228,232,238,257 and 259 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/26/11</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to applicant's amendment filed January 24, 2011.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on January 26, 2011 was in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 219-223, 236, 239-242, 251, 260, 263, 265 and 266 are rejected under 35 U.S.C. 102(e) as being anticipated by Sugaya et al. (U.S 6,538,210).
5. Sugaya (Fig. 14) discloses:

(cl. 219) A chip package comprising: a substrate (1311); only one die (1301) having a first top surface at a horizontal level; an adhesive material (lower portion of 406 closest to 1311; e.g. sealant material causes adherence and therefore is adhesive) joining said substrate and said only one die; a first insulating layer over (e.g. portion of 406 over chip, 1301) said horizontal level, over said only one die, over said substrate and across an edge of said only one die, wherein said first insulating layer comprises a first portion over said only one die and a second

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portion over said substrate but not over said only one die; a patterned circuit layer (1303) over said first insulating layer (e.g. over upper 406), over said horizontal level, over said only one die, and over said substrate and across said edge, wherein said patterned circuit layer is connected to said only one die through a first opening (e.g. space taken by 1302) in said first insulating layer; an inductor (1401) over said horizontal level and over said first insulating layer; and a second insulating layer (1402) on said inductor;

(cl. 220) a first trace formed therein, and wherein said patterned circuit layer comprises a second trace (e.g. metallization in 304) having a thickness greater than that of said first trace¹ (e.g. vertical direction);

(cl. 223, 263) said patterned circuit layer connects multiple portions of said only one die (e.g. chip contains multiple portions & active device in chip, ILD connected to pattern);

(cl. 236) adhesive material comprises conductive paste (e.g. filler s thermally conductive see Table 1 column 4; Col 30, Lines 56-57);

¹ Even if amended to recite a feature not disclosed shapes a prima facie obvious. Applicant has not disclosed that its selected dimensions are critical or for an unobvious reason. As such, the selected dimensions would have been obvious to one of ordinary skill in the art, since it has been held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). See. E.g. In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (Claims directed to a lumber package “of appreciable size and weight requiring handling by a lift truck” where held unpatentable over prior art lumber packages which could be lifted by hand because limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) (“mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled.” 531 F.2d at 1053, 189 USPQ at 148.).

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(cl. 241) inductor has a portion vertically over said substrate, but not vertically over said only one die (e.g. left portion of 1401 not vertically over chip)²;

(cl. 242) metal protuberance (e.g. 1302, 1303 in 1304) and therefore a bump;

(cl. 250) a second opening in substrate accommodates one die (e.g. depression, not labeled in 1311 with die);

(cl. 251) second top surface substantially coplanar with first top surface (e.g. e.g. left top horizontal portion along same plane as right top portion);

(cl. 260) a solder bump (1302) over horizontal level;

(cl. 265) said patterned circuit layer comprises copper (Col. 4, Lines 18-22);

(cl. 266) a metal layer (e.g. 1303) on substrate.

6. Sugaya does not disclose the die having a first horizontal higher, substrate with a second horizontal level, wherein the substrate has no portion at the first level.

7. However, forming no portion of the substrate at the first horizontal level merely amounts to a change in shape. Applicant has not disclosed that its selected dimensions are critical or for an unobvious reason³. As such, the selected dimensions would have been obvious to one of ordinary skill in the art, since it has been held that where the only difference between the prior art and

² Although the prior art is encompassed within the claim limitation note that an amendment like all of the inductor not over the die would still be obvious since it would be merely a rearrangement of parts. Applicant has not disclosed that such an arrangement produces unexpected results or is critical. As such, the rearrangement would have been obvious to one of ordinary skill in the art. See *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.); *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice).

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the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). See. E.g. In *re Rose* , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (Claims directed to a lumber package “of appreciable size and weight requiring handling by a lift truck” where held unpatentable over prior art lumber packages which could be lifted by hand because limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.); In *re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) (“mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled.” 531 F.2d at 1053, 189 USPQ at 148.).

8. With respect to the process limitation of claims 239, 240 and 265 that the circuit is patterned and electroplated or sputtered. The prior art forms the same structure as claimed. The limitation does not impart patentability. See e.g. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a

³ Previous claim 256 disclosed surfaces being coplanar

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different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

9. With respect to claim 221 and 222, it fails to explicitly disclose that the circuit layer comprises a power bus, the product is the same as claimed and therefore capable of performing in the same manner. The claim is unpatentable, since it has been held that the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

10. Claims 264 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. (U.S 6,538,210) in combination with Neugebauer et al. (U.S 5,297,066).

11. Suguya discloses the elements stated in paragraphs 5-8 of this office action and further that its substrate is ceramic, but does not disclose that its silicon.

12. Neugebauer (Col. 3, Lines 40-42) shows that silicon and ceramic substrates are an equivalent structure known in the art known in the art. Therefore, because these two materials produce art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to form the substrate of Suguya from silicon.

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13. Moreover, silicon is known material for forming substrates as shown above. As such, its selection would have been obvious to one of ordinary skill in the art, since it has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945)

14. Claim 262 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. (U.S 6,538,210) in combination with Fiagello et al. (U.S 4,840,923).

15. Suguya discloses the elements stated in paragraphs 5-8 of this office action, but does not disclose its interconnect bump being gold.

16. Flagello shows that Gold and Solder are equivalent interconnect material as known in the art. Therefore, because these two materials produce art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to form the interconnection of Suguya from gold instead of solder

17. Moreover, gold is a known material for forming interconnects as shown above. As such, its selection would have been obvious to one of ordinary skill in the art, since it has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

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18. Claim 267 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. (U.S 6,538,210) in combination with Matsuo et al. (U.S 6,504,227).

19. Sugaya discloses the elements stated in paragraphs 5-8 of this office action, but did not explicitly disclose that its inductor was copper. Examiner previously took official notice that copper was a known materials. Applicant did not timely traverse examiner's taking of official notice. As such, traversal is hereby waived. Matuso (Col. 12, Lines 9-11) is provided for the limited purpose of further evidencing the well known use of copper as an inductive material. See MPEP 2144.07.

Allowable Subject Matter

20. Claims 228, 232, 238, 254, 255, 257 and 259 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art discloses in Nuytkens (U.S. 7,449,412) a substrate having a top horizontal level under a chip with a horizontal level.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES M. MITCHELL whose telephone number is (571)272-1931. The examiner can normally be reached on M-F 8:00-4:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew Landau can be reached on (571) 272-1731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

May 9, 2011
/James M. Mitchell/
Examiner, Art Unit 2813